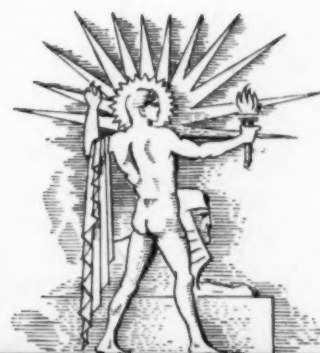


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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



February 7, 1942

Nazi Threat?

See Page 90

A SCIENCE SERVICE PUBLICATION

Do You Know?

Even *skunks* dislike their own smell.

The *bat* is the only mammal capable of true flight.

The *Cila Monster* is the only known poisonous lizard.

Heart disease is still the nation's leading cause of death.

Many female *spiders* devour their spouses after mating.

Owyhee Dam in Oregon-Idaho is built on an ancient crater.

Birds are descended from reptiles, their feathers being evolved from scales.

Fer-de-lance *snakes* have fangs and poison at birth, and can inflict dangerous wounds.

Once considered poisonous, the *tomato* now is believed the most important of all vitamin and mineral-carrying vegetables.

A life-sized *glass woman* with a "heart" which beats 72 times a minute is installed at the Newark (N.J.) Museum.

By "lengthening" the fall days artificially with electric light, a Canadian experimenter persuaded his captive *crows* to fly north.

Whirligig beetles which skate on water, sometimes catch an air bubble beneath their wing-covers, and dive until the air is used up.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

AERONAUTICS

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What sort of tones would be good for air raid sirens? p. 85.

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What was found from a personality study of spastic cases? p. 88.

When do rats bite their nails? p. 88.

PUBLIC HEALTH

What has happened recently to the cost of the morale vitamin? p. 84.

PUBLIC HEALTH—RESOURCES

Why will hemp be grown in the United States? p. 88.

SEISMOLOGY

What natural enemy attacked Netherlands New Guinea? p. 88.

Shellac is a secretion of the lac bugs of India.

Munitions makers use *spider webs* as hair-lines in gun sights and periscopes.

Army *parachute troops* are provided tiny, folding stoves, heated by chemical tablets—the stoves warm emergency rations, can be fitted into a pocket.

A new and extremely showy flower, called *spider-lily*, found in Guatemala, may soon be available to U. S. gardeners, according to the Field Museum of Natural History, Chicago.

Hundreds of cattle every year are killed in South America by the *piranha*, an 18-inch, poisonous fish.

A long extinct "grandfather" *fish* was the ancestor of all backboneed animals, including man.

Synthetic rubber made from *petroleum* is less permeable by gases than natural rubber.

A thirty-foot skeleton of a marine *reptile* which lived 100 million years ago was found in a South Dakota pasture recently by scientists of Chicago's Field Museum.

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HOROLOGY

Daylight Saving Time Will Move Us Closer To England

But Unless Hawaii Adopts a Time-Saving Plan of Her Own, We'll Be Farther Ahead of Her; Name Undetermined

WHEN all clocks in the United States are set an hour ahead at 2 a.m. on Monday, Feb. 9, the whole country will be shifted an hour closer to England and an hour farther away from Japan and other points West.

With regard to England, we shall be right back where we always used to be, with Washington five hours behind London, instead of the present six hours, for London is already on daylight saving, with her clocks an hour ahead of her standard Greenwich time. Last summer she set her clocks two hours ahead and will probably do so again this summer. Unless we do likewise, this will set us back to the six hours difference in time.

But England may do more. She may eventually set her clocks three hours ahead. There has been agitation for this plan but it is not yet decided.

If London does this we shall hardly be able to keep up the pace and maintain the normal difference of five hours. London, nearly 800 miles farther north than Washington, has more daylight to save than we have in the summer time.

Hawaii is not covered by the Act. Unless Hawaii independently goes on daylight saving time, the five and a half hours that the Eastern time zone U.S.A. is now ahead of Honolulu, will be stretched to six and a half.

Japan, the Philippines and Singapore are a day later than the U.S.A., being across the international date line that runs down the Pacific, but their clocks are 10, 11 and 12 hours, respectively, earlier than E.S.T. Singapore is just half way around the globe from Washington. If these countries keep to the standard time of their time belts, these differences will be stretched to 11, 12 and 13 hours.

Australia, though a small continent, nevertheless has three time belts as compared to the four of the United States. Standard time there is 9, 10 and 11 hours earlier than in Washington, but a day later.

No one knows just what to call the new time-baby.

Will it be called daylight saving or standard time? Alas! No one seems authorized to do the christening.

The Interstate Commerce Commission merely fixes the boundaries of the time zones. They disclaimed any authority to specify the sort of time to be used in them or to give it a name.

The U. S. Naval Observatory furnishes correct time to each zone according to Government specifications, call it what you will. They use Greenwich time themselves, the time all astronomers use based on zero degrees longitude which runs through Greenwich Observatory, near London.

The broadcasting stations had received no official word. They hadn't even begun to consider the matter. Columbia as-

sumed that it would be called daylight saving time as it always had been. At NBC the opinion was that it would be called standard time.

Since the one-hour shift is to be made all over the country, the nation will have simply a new standard time, for the duration, in place of the old standard time. There will no longer be any need for a distinction between daylight saving and standard time, they believed.

At the National Bureau of Standards, on the other hand, it was claimed that lack of such a distinction would be very confusing to historians, statisticians and business men in dating past events and calculating time intervals between them.

The act authorizing the change does not give much light. It styles itself an act to establish daylight saving time. But the bill itself merely states that "the standard time of each zone . . . shall be advanced one hour." And after the end of the war "the standard time of each zone shall be returned" to what it was before the war, unless Congress decrees otherwise.

In March 1918, toward the end of World War I, Congress passed "An Act to save daylight and to provide standard time for the United States." The clocks



HELLDIVER

This Wright-Cyclone powered airplane was designed by Curtiss-Wright to provide the U. S. Navy with a "super" dive-bomber that would out-perform any other plane of its type in the world.

then, too, were set an hour ahead all over the United States. Everybody called it daylight saving time, which to most people was then an entirely new expression. In Congressional discussions, legal documents and in the newspapers, the same expression was used.

There was, however, a difference then. Everybody knew that the advanced time was to apply only to the summer months. The law was in fact repealed in the Autumn of 1918. The present law is to apply to the year round, and may be made permanent.

Another curious point is that what is popularly referred to as Eastern Standard Time is called in the new act, and also in previous acts, Standard Eastern Time.

It is likely that a conference will be called between the Bureau of Standards, the Naval Observatory and the Interstate Commerce Commission to decide just what the baby will be called, or at least to establish a common usage among the Federal offices. The most likely title at present appears to be Eastern Standard Daylight Time, ESDT, for the eastern zone. Next April, some communities may wish to advance their clocks an hour beyond Standard Daylight Time, in which case their own variety could be distinguished as Daylight Saving Time.

Science News Letter, February 7, 1942

PUBLIC HEALTH

Bakers and Public Backsliding On Use of Enriched Bread

But Although Food Prices Are Rising, Cost of Vitamin Has Actually Gone Down; Use Is Patriotic Duty

HERE'S good news. Food prices are rising, but the cost of one important food ingredient, the morale vitamin B₁, or thiamin as it is scientifically named, has gone down.

The wholesale price of this vital food chemical, it has just been announced by the manufacturers, has dropped from 60 cents a gram to 53 cents a gram (about one-thirtieth of an ounce). One gram of thiamin would supply the average grown man with all he needed of this vitamin for 500 days.

Both bakers and the public are backsliding on the making and eating of enriched bread which contains the morale vitamin, Dr. W. H. Sebrell, U. S. Public Health Service nutrition authority, finds.

Besides the morale vitamin, enriched bread and flour contain pellagra-preventing nicotinic acid, or niacin as it has been rechristened, and iron to ward off

shortage of this metal blood-builder.

The program for enriching white bread and flour started almost a year ago as a means of improving national nutrition for defense. But today only about 30% of the nation's bread is being enriched. One large baking company which was among the first in the nation's capital to enrich its bread has now gone back to producing plain white bread without the extra vitamins and iron.

"The time has come," Dr. Sebrell declares, "when it is the patriotic duty of every American to eat enriched bread. Don't buy plain white bread."

"If your grocer does not have enriched bread, he can get it for you," he advises.

Even though the cost of thiamin has gone down, the cost of enriching bread has gone up slightly. This is because of the increased cost of making the high vitamin yeast which is what most bakers use to produce enriched bread.

Of the 30% or 35% total increase in the present cost of making bread, however, only 3% can be charged against enrichment.

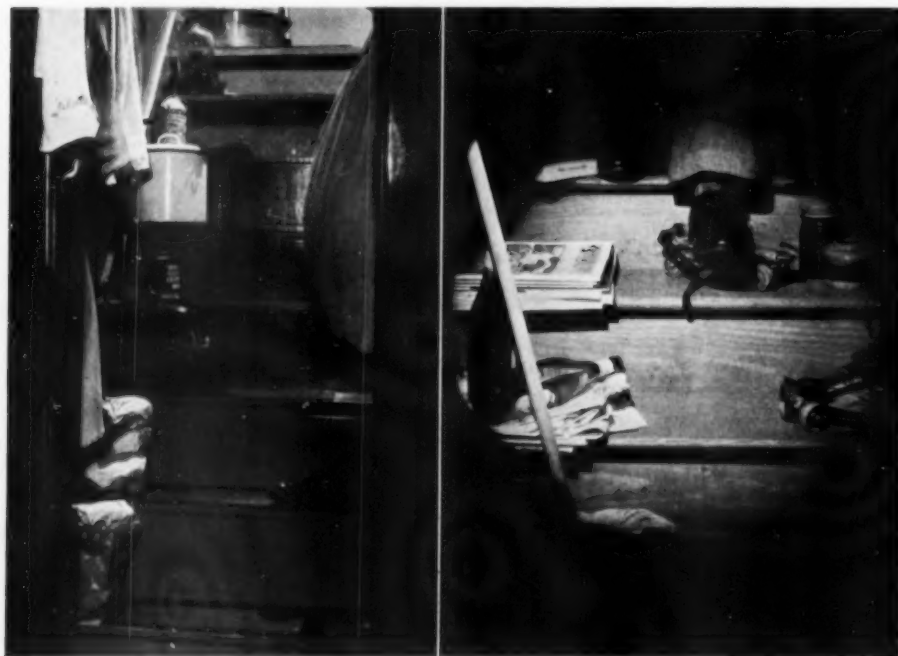
Science News Letter, February 7, 1942

ENGINEERING

How To Guard Against Home Blackout Accidents

WHILE you are making preparations for blacking out your home be sure to make it safe against accidents that may occur in darkened or dimly lighted rooms. Accidents in homes that were not under any war time blackout killed 33,000 persons in the United States and permanently disabled another 140,000 in the year 1940, to say nothing of the nearly 5,000,000 persons who suffered some degree of temporary disability.

Disorder, poor housekeeping in the part of the home where the accident occurred, was the mechanical factor most frequently involved in these peace time home accidents, causing nearly one-fifth of them, according to figures from the National Safety Council.



HAZARD

If you have to blackout your home, will you face the danger of falls because your stairs are cluttered as these are? Americans used to plenty of light at their fingertips now should learn how to make homes safe for darkness. Photographs from National Safety Council.

Unless homes are put into good order and kept that way, such accidents will increase during blackout conditions. Even if your home is so well blacked out that you can leave all the lights on, you or someone in the family may, because of nervousness or haste, move with less care than usual and fail to see the toy Junior has left lying on the floor in time to keep yourself from stumbling over it and injuring yourself in falling.

If you are preparing a single refuge room for your family to use during blackouts while the rest of the home is darkened by turning off the lights, be sure there are no mops or pails on the stairs or in the halls leading to it. These or the bulge of the family laundry bag on the stairway or in a narrow hall may trip or shove someone into a dangerous misstep or fatal fall.

Check up on the extension cords from lamps or other electrical equipment to see that they are not in a place where someone might trip over them. They should run along the sides of a room, not across any space where people walk, and should be firmly fastened to floor or baseboard.

Be sure to put the bridge tables away after using them and to move coffee tables, smokers' stands and the like back to their usual places before dusk or at the end of the evening. You might want to rearrange some of the furniture so as to leave plenty of clear space for walking safely through rooms in darkness.

Science News Letter, February 7, 1942

PALEONTOLOGY

Fossil Footprints of Extinct Beasts Found

FOOTPRINTS of animals more than a million years dead have been found in great numbers in a chalky rock deposit in Graham County, Kans., and are reported in *Science* (Jan. 23) by Dr. George F. Sternberg and Dr. George M. Robertson of Fort Hays Kansas State College. The tracks include those of camel, rhinoceros, mastodon, an unidentified carnivore, and smaller animals.

The tracks were found in rock exposed in the spillway of a pasture pond. In the pre-Ice Age days when they were formed, the same spot seems to have been a water-hole visited by thirsty animals. Deeper in the rock, and belonging to a still earlier geologic period, were found remains of fish and turtles.

Science News Letter, February 7, 1942

GENERAL SCIENCE

World Community Expected To Result From War

Geologist Predicts the Planned Coordination of Human Activities of All Sorts When Peace Comes

THE collective organization of all human beings into some form of world community, with a planned coordination of human activities of all sorts, was predicted as a result of the war by Dr. Kirtley F. Mather, Harvard professor of geology, speaking at the Cranbrook Institute of Science in Bloomfield Hills, Mich.

"Regardless of the outcome of the present World War, the old order will inevitably be replaced by a new order that is even now being forged on the ringing anvil of history," Dr. Mather said.

"This organization of individuals into a world society is the inevitable consequence of the extensive use of natural resources that are unevenly distributed over the face of the earth. The ceaseless flow of things from mine and quarry, field and forest, to processing plants, mills and refineries and thence to consumers is a fundamental necessity in an age of science and technology."

Dr. Mather said that it is quite likely that the historian of the future will rate this middle third of the twentieth century as equal in significance to the closing third of the fifteenth century. Today, just as in that ancient time, human civilization is moving from an era that is closing into a new era that is opening.

There is actually an abundance of the needed raw materials, Dr. Mather said. A careful appraisal of the world stores of non-renewable resources, including known substitutes for such resources as petroleum that are known to be present in insufficient amounts, reveals the fact that there is enough and to spare of all the necessary raw materials to provide the physical basis for the efficient, comfortable existence of every human being who is likely to be born anywhere on the earth during the next two thousand years at least.

"Science and technology are even now inaugurating a new relationship between man and the things he needs or thinks he needs," he said. "For a century or more the tendency has been to use more and more of the non-renewable resources, nature's stored capital, and

relatively less of the renewable resources, man's annual income. For example, between 1900 and 1925 we used up more of the world's resources of the various metals and mineral fuels than had been used by man throughout his entire history prior to the year 1900.

"But within the last decade, scientific research has reversed the trend. The expanding chemical industries with their plastics and synthetic resins depend largely upon things that grow, and these are a product of the potentially inexhaustible resources of the soil. Long before the capital stored by nature throughout geologic time has been exhausted, man may well have learned how to live within his annual income. Thanks to discovery and invention, it may be truly practical literally to beat our swords into ploughshares, our spears into pruning hooks.

"Mother Earth is rich enough to nourish every man in freedom. It is man, not nature, that enslaves. The question whether it is better to starve as a free man or grow fat as a slave has often been a difficult one to answer, but that question need never arise if men use intelligence and good will in determining the relation between the individual and society."

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PHYSICS

V Symphony Has Good Tones For Air Raid Siren

THE first four notes of Beethoven's Fifth Symphony which signal Morse code "V" for "Victory" could be used as the tone range for air raid sirens.

National Bureau of Standards tests of various siren tones show that a semi-musical note anywhere within the musical scale from A below middle C to C above middle C is best heard against city noises. Physicists will recognize this range as between 200 and 500 cycles.

The first four notes of Beethoven's Fifth are three G's and E flat, well within the recommended range.

Science News Letter, February 7, 1942

ENGINEERING

New Industry Keeps Cars Running

Tire Treading, Comparable To Having Shoes Re-Soled, Will Give Owners Use of Cars for Several Years

By DOUGLAS W. CLEPHANE

IF IT were not for the recent development of a new industry the great majority of the motor vehicles in the country would be off the roads within a year, because of lack of tires.

However, tire treading will keep many of these vehicles in operation. When the government suddenly cut off all new tires from civilians except for a few emergency needs, Leon Henderson, head of OPA, said in effect, "You can't have new tires, but at least for the time being you can have them treaded."

Millions of American car and truck owners then heard of the new treading industry for the first time. "What is treading? Why have we not heard of it before? Is it safe? How much should we pay?" These questions have been major topics of conversation for the past few weeks.

Treading can be compared to having shoes soled and heeled. When a good shoe has gone through the original sole or the heels have become worn, most of what you paid for remains. The same thing is true with tires. Increasing vehicle speeds and other factors have forced the tire manufacturers to build a tire that will far outlast its tread. When the non-skid design has worn off, the balance of the tire is still in good condition. It is a great economic waste to discard this tire casing and the well informed tire users have been having their tires treaded two, three or four times for a number of years.

Industry Is New

But why is the average motorist just hearing about this? There are several answers. First the tire treading industry is somewhat new. Only in the last five or six years have the necessary equipment and supplies to place a new tread on the old tire become available. But for many years all the larger commercial operators have been having their tires treaded. There were twenty tire dealers in the past who have wanted to sell you new tires for every one that was equipped to tread them. The tire manufacturers have naturally been more inter-

ested in selling new tires than in making the old one last as long as possible. The organizations who are equipped to do this work are usually comparatively small and their business has grown so rapidly in recent years they have not had to do much advertising to keep busy.

But during this period the number of tires treaded each year has increased from about 3,000,000 in 1936 to nearly 8,000,000 in 1941.

The United States Army recently completed an exhaustive study of treading on all types of vehicles under the hardest possible operating conditions. The final Army report said that a good new tread job on a tire in good condition would last an average of 80% as long as the original tread and that the tire can be treaded as many as four or five times if given proper care. Most post office trucks ride on treaded tires and scores of cities have all their police and fire department cars and trucks riding on rebuilt tires.

Precautions Necessary

As with many other new industries there are certain precautions the buyer should take in having the work done.

When you start to have your tires treaded you may begin to hear such words as retreading, recapping, top capping and many trade names. What is the difference? Very little. When a tire is retreaded, the operator takes off all the old rubber on the tread portion of the tire with a high speed wire or tack wheel. A coat of cement is applied, the strip of new rubber put on, and the tire placed into a steam heated mold which forces the new smooth rubber against a metal design by air and mechanical pressure. The heat presses this design into the smooth rubber and at the same time vulcanizes the new rubber to the old casing.

Retreading is now rapidly being discarded in favor of a slightly different method by which the surface of the old tire is merely roughened, but all the old rubber is left on and the process continued as described above. The government has just issued an order prohibiting the future manufacture of materials for retreading, so in the future the opera-

tor must use the newer recapping or top capping method.

Assuming the tire was in good condition except for the worn tread, a quality treading job will usually last almost as long as the original tread, in fact some shops guarantee it to give new tire service. The tire will be just as strong and will offer no more dangers of blowouts than a new tire.

Won't Work on All

However, not all tires can be treaded. Most tire manufacturers have been selling very cheap tires in recent years. These are known in the trade as fourth or fifth line tires and cost less than half the price of the same make of tires with which your car was originally equipped. These cheap tires are not as strong as the same maker's first line and usually the sidewalls, wire beads or fabric will be damaged beyond repair by the time the tread has worn out. Also it is dangerous to tread tires which are very old or which have large breaks or other damage. Your local treading station will be glad to tell you the exact condition of your tire and if they recommend against treading it will be wiser to put up your car than risk serious accident through tire failure.

As with anything else, you can buy a very cheap treading job or you can buy the best. The equipment to do the work has only been developed recently. There is still a lot of treading equipment in use which is obsolete and which will damage the tire in the heating process. The shop can use the best materials or they can save money by using inferior cement, repair materials and rubber.

The surest way to ruin your tire is to let it wear into the fabric before you have it treaded. In that condition a bump into a curb or other shock will put a hole in it that cannot be repaired with safety. Take your tires to a treading shop just before the non-skid design has worn off. Then if you take proper care of them and repeat the operation each time they become worn, you can apply from two to five new treads.

The government has recently set a top price that treading shops can charge for all sizes. The great majority of recent model passenger cars are equipped with 6.00-16 size tires. The government says that no shop can charge more than \$7.50

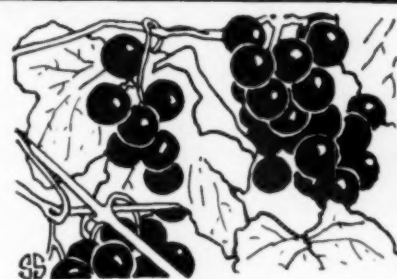
for the best work on this size or more than \$6.45 when lower quality rubber and other materials are used. However, there are shops that will do the work for considerably under this price. Such savings do not pay. If a lower price is charged, much of the vital inspection, minor repair work and other steps to rebuilding the tire to original condition must be skipped.

Toward the middle of January the government issued an order requiring that all rubber used for passenger car treading be cheapened by using less crude

rubber and more reclaimed rubber, carbon black and other ingredients. Many shops have a supply of the former higher grades of rubber on hand which may last for a few weeks. However, shortly all passenger car owners will be getting the cheaper rubber. This will probably last less than half as long as the original tread.

This is just one of the many steps the government has taken to allow as many people as possible to tread their tires.

Science News Letter, February 7, 1942



Bible Botany

THE BIBLE is filled with reference to plants, literally from cover to cover. It begins in the first chapter of Genesis, with the earth bringing forth "grass, the herb yielding seed, and the fruit tree yielding fruit after his kind;" and the last chapter in the Apocalypse of St. John tells of a mystical Tree of Life growing in the New Jerusalem. In between, many scores of species are mentioned. There is no book in The Book that does not have at least a little botany in it.

A recent book by Eleanor A. King (*Reviewed, SNL, this issue*) brings together the essential information about plants mentioned in the Scriptures, and tells how many of them can be made even more vividly familiar by actual cultivation in our own back yards.

Many of the plants are thoroughly familiar to us, some of them but little changed since the days when Abraham and Moses and Jesus beheld them, others vastly improved over the ancient forms through centuries of selection and breeding.

Corn and oil and wine, that basic nutritional trilogy, are among those but little altered. "Corn," in the Bible, always means the common bread grain of the time; usually wheat, sometimes including barley. American corn, or maize, is of Indian origin and of course was unknown in ancient Palestine. "Oil" always means olive oil; and the cultivated olives of the Near East, grown mainly for the oil press, are essentially the same trees they were two and three thousand years ago. The vine that yielded Biblical wine is rather unlike the table-grape varieties of the eastern United States, but quite similar to the European type of wine-and-raisin grape grown in California, especially the small, dark "Mission" variety. (Turn to page 91)

ENGINEERING

Power For War Industries Will Be Increased

Considerable Saving of Critical Materials and Labor Possible by Making Existing Equipment Do More Work

MORE power to meet war's demands will be obtained out of existing electrical machinery, the American Institute of Electrical Engineers heard at their meeting in New York.

New plants and transmission lines will be needed to meet war's increasing demands for electrical energy, but a considerable saving of critical materials and of labor can be effected by making existing equipment do more work. This was pointed out by Philip Sporn of the American Gas and Electric Service Corporation, New York City.

Existing equipment is capable of a considerable overload. It is desirable to examine how much of this could be carried regularly with reasonable safety during the war time, H. P. St. Clair, also of the American Gas and Electric Service Corporation, declared.

In addition, there are devices, voltage regulators, capacitors and boosters, by which the capacity of a transmission line can be increased, or a saving of copper effected, Harold Cole of the Detroit Edison Company pointed out. Some rearrangement of the facilities for greater economy and efficiency would accomplish the same purpose.

Mobile Transformer

A MOBILE 2,500-kilowatt transformer substation that can be rushed on a truck to any spot where needed, was described by M. W. Reid of Ebasco Services. This transformer can draw

high-voltage current from any point along a power line and transform it to a lower voltage for further transmission along a temporary line, or to a still lower voltage for immediate domestic use. It can supply a town, a camp or a group of factories with the electricity they need and at any voltage they need, when through disaster of war their regular supply is cut off or deficient.

Prizes Awarded

THE Alfred Noble Prize for 1940-41 was presented to Robert F. Hays, Jr., of the Sperry Gyroscope Company's research laboratories, for his paper entitled "Development of the Glow Switch."

The Edison Medal, highest award of the A.I.E.E., was presented to Dr. J. B. Whitehead, professor of electrical engineering at Johns Hopkins University.

Science News Letter, February 7, 1942

● RADIO

Saturday, February 14, 1:30 p.m., EST

On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Lawrence Langner, New York patent attorney, who is one of the principal figures in the Theatre Guild and also a member of the National Inventors' Council, will discuss how inventors can help win the war.

Listen in each Saturday.

Tuesday, February 10, 10:15 p.m., EST

Science Clubs of America programs over WRUL, Boston, on 6.04 and 11.73 megacycles.

One in a series of regular periods over this short wave station to serve science clubs, particularly in high schools, throughout the Americas. Have your science group listen in at this time.

MEDICINE

Syphilis Treatment With Mapharsen Is Safer

SYPHILIS can be treated with greater safety and fewer toxic reactions when mapharsen is used instead of neoarsphenamine, Dr. Edward A. Levin and Dr. Frances Keddie, of the University of California Medical School, found in reviewing records of over 15,000 patients.

Only six deaths have been reported from use of this drug, although over 12,000,000 doses have been manufactured and distributed, the California doctors report (*Journal, American Medical Association*, Jan. 31).

Reports from the U. S. Navy show no deaths in 121,689 injections of mapharsen, but 49 deaths in 1,301,913 injections of neoarsphenamine. Non-fatal reactions were also many fewer with mapharsen than with neoarsphenamine.

The deathrate following mapharsen, reports in medical literature show, is less than one-half that of neoarsphenamine.

Science News Letter, February 7, 1942

PSYCHOLOGY

Rats Bite Their Nails When Faced With Dilemma

A RAT may bite his nails, too, when he is faced with a problem that is too difficult for him.

An animal that developed this nervous habit when forced to jump in a situation where he couldn't tell the right jump from one leading to punishment is described by Drs. B. H. Sampson and T. C. Schneirla, of New York University (*Journal of Comparative Psychology*, December).

The animal did not actually bite his nails entirely off, but he did shorten them and the nail-biting was "energetically performed," the scientists report.

The rat, called by coincidence the same name as the "morale vitamin", B₁, had previously learned to distinguish between a black card containing a white circle and another card that was white with a black circle. He would jump to the white card and be rewarded.

Then the cards were changed in shade to be more alike and make the problem more difficult. But if the rat hesitated more than a minute, a strong blast of air was blown at him until he jumped.

The mental strain of this coercion coupled with the difficulty of the problem was too much for B₁. He started biting his nails.

Other rats have been observed to bite

their nails under similar difficulties, but in these others it has not been persistent, the psychologists report.

Science News Letter, February 7, 1942

PSYCHOLOGY

Personality Will Not Disclose Brain Injury

PERSONALITY traits cannot be relied upon by physicians as a means of diagnosing brain injuries, Dr. Olga Bridgman, psychologist and specialist in child diseases, has concluded from a study of children who were brain injured at birth.

The 123 children studied by Dr. Bridgman at the University of California Hospital during the past five years were so injured at birth that they suffered from the peculiarly hopeless type of paralysis known to physicians as "spastic."

Despite their serious physical and mental handicaps, they nevertheless differed widely in personality, Dr. Bridgman found. Some were shy, some friendly, some aggressive. And each had his own predominating mood—happy, unhappy or contented.

Science News Letter, February 7, 1942

PUBLIC HEALTH—RESOURCES

Hemp Will Be Grown, But Bureau Will Police Areas

HEMP growing in the United States, which the U. S. Bureau of Narcotics has tried to stop in order to prevent marijuana addiction, is now apparently going to be allowed and even encouraged as a result of the war.

This is seen from a War Production Board order prohibiting the use of domestically produced hemp seed for any purpose except the growing of hemp fiber or the growing of additional hemp seed. The officially stated reason is to conserve and increase the domestic hemp supply. In the past the bulk of this country's hemp requirements for rope and sacking have come from the Philippines.

The Bureau of Narcotics, however, will police the areas where the hemp is produced, Commissioner H. J. Anslinger states. He believes that through cooperation with federal, state and local authorities, it will be possible to control the hemp growing so that none will be diverted to the making of "reefers" or any other form in which it could contribute to narcotic drug addiction.

Science News Letter, February 7, 1942

IN SCIENCE

SEISMOLOGY

Severe Earthquake Off Coast of New Guinea

THE Netherlands Indies have been visited by a severe earthquake—as if Japs weren't enough. News of the shock was relayed by the earth's core itself to American seismological observatories, which reported to Science Service. The quake centered somewhere near the eastern shore of Geelvink Bay, a deep indentation on the northern coast of the Netherlands half of New Guinea, in approximately 3 degrees south latitude, 137 degrees east longitude. This location is about 1,200 miles east of battle-blasted Macassar strait.

The earthquake began at 10:29.4 p.m. (New Guinea time) on Tuesday, Jan. 27. Transmission and decoding of data were delayed by wartime conditions.

Observations were made at St. Louis University, Utah State College at Logan, the Pasadena Seismological Observatory, and the observatories of the U. S. Coast and Geodetic Survey at College, Alaska, Tucson, Ariz., and San Juan, P. R.

Science News Letter, February 7, 1942

NUTRITION

Pneumonia Susceptibility Affected by Diet

NEW evidence that vitamins play an important part in building resistance to germ diseases such as pneumonia appears in a report from Jerald G. Wooley and Dr. W. H. Sebrell, of the U. S. National Institute of Health.

Susceptibility to fatal infection with Type I pneumonia germs is greater, in mice at least, when the daily diet does not contain enough of the two B vitamins, the morale vitamin B₁ and riboflavin, these scientists find. Details of their experiments appear in the current issue of *Public Health Reports*.

The mice had been on short rations of these two vitamins for some little time before pneumonia germs were dropped into their noses. Attempts to ward off the infection by increasing the vitamin rations after the germs had been introduced into the animals' noses were unsuccessful.

Science News Letter, February 7, 1942

NE FIELDS

AERONAUTICS

German Bumper on Bombers Considered Clumsy Device

GERMAN clumsiness when it comes to devising some of the gadgets of war is shown, according to the British aviation journal, *Flight*, by the way they have attempted to meet the problem imposed by the sort of heavenly wire entanglements dangled by barrage balloons.

Heinkel bombers are now being cumbered with huge fend-off bars like automobile bumpers or cow-catchers that weigh several hundreds of pounds and which do not serve to cut the wires at that.

"What happens to the c.g. (center of gravity) and bomb load with all this weight projecting in front can be guessed," the journal comments.

By contrast, *Flight* shows a close-up photograph of the neat wire cutters the British Avro Manchester has set into the leading edge of the plane.

With either the British or the German type of gadget, however, de-icing of the leading edge of the plane becomes a serious problem, the journal points out.

Science News Letter, February 7, 1942

ARCHAEOLOGY

Quivira Province Located In Southern Kansas

GOLD-GLEAMING cities of Quivira, whose mythical promise lured Coronado's exploring army from Mexico far up into the Great Plains 400 years ago, were in reality humble straw-built huts of Wichita Indians in what is now central and southern Kansas, it appears from a new Smithsonian Institution report, based on researches by Dr. Waldo R. Wedel, U. S. National Museum archaeologist.

This elusive province, long sought by historians and archaeologists, was in the valley of the Arkansas river, Dr. Wedel believes. Excavations on old sites of human occupation in that area indicate that the Indians there had direct or indirect contact with white men, for scraps of chain mail, such as the armored warriors of Coronado wore, have been

found, mingled with scraps of Indian pottery, stone and bone tools and weapons and other remains. Other finds of European origin include glass beads and an iron ax blade.

Further evidence of trade contacts with tribes to the southwest are found in such things as turquoise, obsidian and pieces of painted glazed pottery. It was among Southwestern Indians who produced such goods that Coronado heard tales of the fabulous wealth of "Gran Quivira," far beyond the ever-receding northeastern horizon.

The protohistoric "Quivirans," Dr. Wedel's researches show, were farmers, whose principal crops were corn, beans and squashes. They cultivated the rich black soil with hoes made from bison shoulder-blades. They obtained meat by hunting bison, antelope and smaller animals. Timber-strips along the streams afforded a variety of fruit and berries, especially grapes, plums and mulberries.

Science News Letter, February 7, 1942

MEDICINE

New Quick Method of Testing Blood Group

A NEW, quick method of determining a patient's blood group before transfusion is reported by Dr. William Thalheimer and Dr. Sophronia A. Myron, of the Manhattan Convalescent Serum Laboratory and the New York City Health Department laboratories (*Journal, American Medical Association*, Jan 31).

With this method, an intern or technician can determine the patient's blood group in from five to 30 seconds. The test is made on a card or paper which becomes a permanent record that can be attached to the patient's hospital history.

The test resulted from the discovery of the New York doctors that blood group specific isoagglutinins for determining blood types can be greatly concentrated. These isoagglutinins are the substances in blood serum which make red blood cells of another person's blood clump together if the two do not have the same type of blood.

It is difficult to get large amounts of group A and B serums suitable for determining blood groups because relatively few people in groups A and B have high concentrations of these isoagglutinins. By using chemical methods for concentrating the agglutinins, a satisfactory preparation can be easily obtained for blood grouping. This preparation is used in the new, quick and permanent test.

Science News Letter, February 7, 1942

AERONAUTICS

Jet-Propelled Airplane Tested in Italy

THE WORLD'S first propellerless, jet-driven airplane has been built and tested in Italy, it is stated in a late-December issue of the British aviation journal, *The Aeroplane*. The craft, invention of an Italian engineer named Secondo Campini, takes in air through a large opening in its nose, compresses and heats it in a tunnel passing through the fuselage, and expels it in a powerful jet through the tail. It thus acts on a rocket-like principle, though properly speaking it is not a rocket-plane. In a rocket, the propelling jet is furnished by the rush of gases from the combustion of the fuel itself.

The Campini jet-propelled aircraft, which weighs about 11,000 pounds, flew from Milan to Rome in 2¼ hours, at an average speed of about 130 miles an hour. Since this is a pioneer model, high speeds were not attempted. Jet propulsion, however, does aim ultimately at higher speeds. The inventor believes that the upper limit of speeds possible to screw-propelled aircraft has been about reached, and that if higher velocities are to be attained radically new principles of propulsion must be worked out.

Science News Letter, February 7, 1942

PUBLIC HEALTH

AMA Urged to Set Up Contraceptives Standards

THE American Medical Association is urged to set up standards for contraceptives, as it already has for drugs and foods, in a report on three birth-control clinics in New York, Cincinnati and Spartanburg, S. C., by Dr. Regine K. Stix, of New York. The study, financed by the Milbank Memorial Fund, is reported in the *A.M.A. Journal* (Jan. 24).

Patients at the clinics were largely women whose health would be injured by child-bearing. The study convinced Dr. Stix that a standard set by the Association after proper study would do much "to improve the quality of commercial contraceptives."

Dr. Stix asserted that "wise pressure" on makers of contraceptives would help to reduce prices to a point where many people in the poorer sections of the country could afford them. These families, it was pointed out, are least able to bear the cost of raising and educating children.

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AERONAUTICS

Air Weapon in Reserve

Hit-and-Run Raids by Medium-Range Bombers Can Be Made Possible by Catapult Ships in Mid-Ocean

By DONALD G. VAN DE WATER

ONE powerful weapon of aerial warfare, potentially devastating, still awaits use in this air-conscious World War II.

It is not so much a weapon, really, as a technique of hit-run fighting, wickedly effective, hard to combat and very much to the taste of the Nazis as well as Japan.

It involves the use of fast flying boat bombers operating not from land or from huge, expensive and vulnerable aircraft carriers, but from smaller mother ships. These mother ships are much larger and more effective than the small seaplane tenders such as the U. S. S. Heron which distinguished herself so notably in Pacific waters recently. But they are catapult ships, not ships with decks for take-off runs as are the aircraft carriers.

Such catapult ships can be based as much as 600 miles from the objective and can continually change location in order to escape detection. Low, small, and fast, they are extremely difficult to locate or to pursue with other surface craft. Even if sunk, they are no serious loss, for they can be built for about the cost of three large bombing planes and can be turned out in large quantities by mass production methods.

Only one effective weapon is known against this combination of flying boat bombers with a catapult ship which is at the same time fueling station, hospital ship, weather observatory, repair station, launching device, arsenal and even at times radio beacon. That weapon is a better use of the same combination.

Have Had Practice

Dress rehearsals for a possible projected surprise attack on New York were conducted by Germany under the guise of commercial operations not long before the outbreak of the present World War.

A fleet of motorships, powered with economical Diesel engines, of which the "Friesenland" (shown on the front cover of this week's SCIENCE NEWS LETTER) is typical, were operated by the Deutsche Lufthansa—transatlantic air line.

The "Friesenland" dispatched over one hundred transatlantic flights from the

Port of New York to Germany in 1938 by catapult-launching seaplanes and flying boats. The aircraft used were the 4-engine Blohm and Voss Hal seaplanes (Ha 139), which has a cruising range of 3,230 miles, and also the flying boat Dornier Wal.

The "Friesenland" is a 6,813-ton boat, 461 feet long and with a 54.12-foot beam and 19-foot draft. She has a speed over 16 knots. She has a raking square stern to aid in the launching of seaplanes.

Her unusual catapult system was developed especially for these vessels by German aircraft engineers. It not only gives the aircraft a push forward, providing flying speed, but actually a toss upward into the air at take-off. This enables the seaplane to take off from the deck of the mother ship fully loaded with a heavy "cargo."

Landing even on comparatively rough water is made possible by the aid of a drag towed from the stern of the mother ship. By landing into the wind in the protection of the wake of the ship, a seaplane can negotiate water much too rough for ordinary landing at sea.

Here are some of the possibilities of such catapult ships, as envisioned by U. S. aviation authorities who looked

them over critically when they operated off New York:

They can be equipped and sent to sea for long periods of time with little or no replenishment of supplies.

They can be supplied with sufficient fuel not only to maintain the four-engined seaplanes that they start out with, but also to service submarines that might operate in their vicinity.

They can operate with Diesel engines, using the same fuel required by the submarines and aircraft engines they service. This insures economy as well as convenience, and avoids the fire hazard of gasoline.

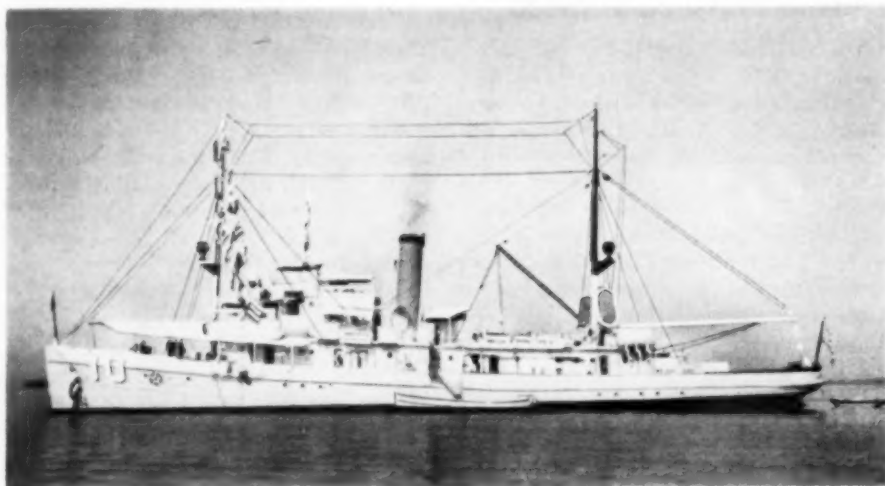
No Conspicuous Smoke

Because they have Diesel engines they do not throw out much tell-tale smoke to reveal their position.

They can be stationed far at sea—roughly halfway between home port and enemy targets. By so doing, if a seaplane should be lost, it could be replaced direct from the home port.

Bombers based on such catapult ships could be of moderate cruising range. Long-range bombers are very expensive and difficult to replace. Even the biggest of them when making a cross-ocean round trip must cut down on the load of bombs carried to make room for the fuel necessary for return.

The catapult ships can double as ma-



TENDER

The U. S. S. Heron, distinguished in action in the Pacific, is a converted mine sweeper. It acts only as a nautical filling station for large flying boats and cannot be used to aid in launching of any type of aircraft. This is an official U. S. Navy photograph.



CARRIER

Newest aircraft carrier in America's Navy is the U. S. S. Hornet. On the decks of this ship, nearly a hundred airplanes can take off and land. This type of vessel, although very effective, is expensive, slow to build, and vulnerable to torpedo attack. This is an official U. S. Navy photograph.

rine raiders. They can be equipped with sufficient armament to prey on cargo vessels.

Although obviously not calculated for any sort of mass bombing of cities like that practiced in the past on London, the seaplanes based on catapult ships could conduct a series of hit-run surprise raids which might destroy coastal oil supply bases, reservoirs and city water supply systems, power supply centers, transportation centers, and so on. Piloted by men already familiar with the lay of the land, the raids could be devastating.

Trusting to her ability at a quick get-away from one unmapped location to another, and to the difficulty of detecting a small boat on a mighty ocean, the mother ship might boldly summon her catapulted planes to the shelter of her decks by a radio homing device operated for brief intervals. Even though all the Coast Guard and Navy vessels on the sea should pick up her signals, they could not speed to her destruction fast enough, unless they happened to be in the immediate vicinity. Her only fear is from aircraft.

If Germany plans a surprise attack on the United States using these catapult

ships—apparently not yet sprung on her enemies in this World War—it is logical to suppose that the time she would pick would be in the early summer months when weather and water conditions are best for catapulting and retrieving seaplanes that have come down on the water.

Best protection against such an eventuality would seem to be in a superior use of the same weapon. The United States has the facilities to launch any number of such catapult ships. They could be stationed 300 to 400 miles from the coast. From their decks an air patrol could be on the constant lookout for enemy aircraft, enemy carriers or catapult ships, submarines or any other signs of enemy activity.

These "outer defenses" would stand a chance of spotting aircraft headed for our shores in time to take action to warn our coast defenses. They would be better placed for trapping catapult ships, surface raiders and submarines than would an air patrol that must return to shore for refueling or aid.

As an offensive weapon, the seaplane catapult ship team would be just as effective for the United States as for our enemies. For relatively little cost in money

and precious construction time, a whole fleet of such small ships could be placed at strategic points in the Pacific that would enable our airplanes to conduct the sort of paralyzing raids on Japanese island bases that Japan attempted on Pearl Harbor.

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GEOLOGY

Torrential Rains Held Responsible for Erosion

TORRENTIAL rains called "gully-washers" in some parts of the South are just that; they are largely responsible for the disastrous deepening and spreading of gullies in Southern fields. So Prof. Stephen S. Visser of Indiana University has concluded, after a study of data accumulated by the U. S. Soil Conservation Survey and the U. S. Weather Bureau (*Journal of Geology*, Jan.-Feb.).

Soil erosion, blamed in various quarters on slack farming, lack of permanent ground cover, etc., involves also one neglected factor—the intensity of individual rains, Prof. Visser believes. Total annual rainfall does not tell the whole story by any means: 50 inches of precipitation distributed as a hundred half-inch rains will not do a minute fraction of the mischief that would be caused by the same amount concentrated in ten five-inch downfalls. And the Gulf States, the present studies indicate, have heavier single rains, and more of them, than any part of the North with comparable annual precipitation.

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From Page 87

There are some plant names in the Bible that often lead modern readers into confusion. The "husks that the swine did eat" have nothing to do with our familiar corn-husks; they were the pods of a leguminous tree known as the carob. Coarse and tough to chew, they are nevertheless sweetish and really nutritious. So the Prodigal Son might have been worse off than he was, at that.

Sycamore does not mean the tree known by that name in this country. That tree is called the plane-tree in the Bible. The Biblical sycamore (properly sycomore) is a species of fig. The "lily of the field" was not a lily; Miss King says it was an anemone. "Mulberry," in I Chronicles, seems to be a mistranslation for quaking-aspen. There are other instances of this kind, where it is always interesting, and sometimes important, to have incorrect impressions set right.

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ASTRONOMY

Trace in Heavens of Greatest Stellar Explosion Ever Seen

Remnant of What Was Probably Famous Nova of 1604 Found in Small Fan-Shaped Cloud on Infra-Red Photos

A REMNANT of what was probably one of the brightest "temporary" stars on record—the famous nova observed by Kepler in 1604—has been discovered by Dr. Walter Baade of the Mount Wilson Observatory. The object is very close to the position given by Kepler and resembles a small fan-shaped cloud. It is clearly visible on photographs taken in red light but very faint on the ordinary plates sensitive only to blue light. This probably explains why repeated attempts in the past to locate the star have failed.

The star suddenly blazed out in 1604 and for several weeks was as bright as the planet Jupiter. For nearly two years it was studied by the great astronomer,

Kepler, until it faded from sight. Although Kepler left careful records of the star's position and brightness, repeated search centuries later with the most powerful telescopes failed to locate the object.

Kepler's nova is of extraordinary interest in that it was undoubtedly a supernova, a type of nova far brighter than the ordinary temporary stars. It is believed to have been the third supernova to appear in our galactic system in the last 900 years. Before the outburst the supernova may have been just an ordinary star, but afterwards for a brief time it often emits as much light as ten million stars like our own sun.

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are amplified 20 times, which brings the recording into plain view, and the apparatus is arranged to minimize pickup of the mother's electrocardiogram.

The small 12-pound amplifier of standard radio parts is simple to operate and can be easily carried with the electrocardiograph.

Science News Letter, February 7, 1942

In Florida swamps there are oysters that live in trees.



SCIENCE CLUBS OF AMERICA

Sponsored by Science Service

NEWS OF CLUBS

SALISBURY MILLS, N. Y.—Model airplanes, astronomy and photography, are chief pursuits of the Science Club at Salisbury Mills School, sponsored by Frederic C. Freer, principal and head of the science department.

Editorial Note: It is recommended that those interested in model airplane building try their hands at the production of true scale models. The U. S. Navy would like to see American model makers standardize constructions on a scale of 1 to 72; that is, one inch in the model should represent six feet on the full-sized craft. Such small models demand delicacy of manipulation but they serve a distinct purpose in that a group of such scale models, all suspended by threads from the ceiling, will give the viewer an excellent comparison of the relative sizes of various airplanes.

Beginning February 9 the Science Page, released to newspapers by Science Service, sponsor of Science Clubs of America, will show full-size drawings of scale models. We recommend that these accurate drawings be used for the solid wood constructions. A set of finished models will be useful to airplane spotters.

NEW YORK, N. Y.—Much interesting experimental work can be performed on the kitchen or dining room table, as Ira J. Laufer, president of the Junior Research Society, and his father have learned. Ira had an idea he could advance the study of living organisms and believed he could find a number of friends who had similar inclinations. Ira's father was kindly disposed toward a plan for forming a club. Canvassing his neighborhood, Ira soon got a group of young fellows of his age together. Now they meet up at the tables in Ira's home, but make sure that everything is cleaned up afterward. All this makes father, Irving Laufer, very happy because—you see—he is the sponsor.

MEDICINE

Make Electric Recordings of Unborn Baby's Heart

ELECTRIC recordings of the heart beats of an unborn baby can now be made successfully for practical purposes. A technique for this is announced by Dr. Arthur J. Geiger, Dr. Willys M. Monroe, and Dr. Allan V. N. Goodyer, of Yale University School of Medicine, in the proceedings of the Society for Experimental Biology and Medicine. (December)

Doctors have tried for years to obtain electrocardiograms of the unborn baby's heart beats, although these graphic recordings of the electric current produced by the heart muscle contraction have

long been used in studying heart disease.

A method of securing reliable records of the fetal heart beat from the sixth month of pregnancy and occasionally earlier has also been reported by Dr. Hubert Mann and Dr. Phineas Bernstein, of New York (*American Heart Journal*, September).

The new technic, the Yale investigators report, enables the doctor to tell promptly whether a woman is about to become a mother or whether she has a tumor. It does not give "false positive" results and takes less time than mouse or other biological tests for pregnancy.

"Will it be twins?" can be answered much earlier than by any other method of examination.

In their work the Yale doctors use a single stage resistance-coupled amplifier with a conventional portable electrocardiograph. The electric current accompanying the unborn baby's heart beats is picked up by disk electrodes placed on the mother's abdomen. They

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SCIENCE NEWS LETTER

1719 N St., N. W. Washington, D. C.

NEW BETHLEHEM, Pa.—In the Retort and Sculpt Club at New Bethlehem High School, each member is required to complete one laboratory project each year. The club expects to enter several exhibits at the Science and Engineering Fair to be held at the Buhl Planetarium, Pittsburgh, and also hopes to conduct and sponsor a Science Fair in New Bethlehem. The club is affiliated with the Pennsylvania Junior Academy of Science as well as with Science Clubs of America and is sponsored by Lloyd S. Bromley, science teacher.

SUPERIOR, Nebr.—Cutting slots into an old Ford motor so that everyone can see all moving and working parts is a task being done by Keith Semke of the Superior High School Science Club sponsored by Glenn R. Yont, science instructor. Some members of the same club are taking fingerprints and sending them to the F.B.I.; others are working on by-products of coal, preparing simple cosmetics or conducting experiments in photography, radio and taxidermy.

FREEPORT, Ill.—Membership in the Freeport Nature Club, even though established at the Freeport High School, is not limited to high school students. The club maintains a nature trail and goes in for nature hikes for the study of birds, flowers and trees. This year the members expect to hold an Open House exhibit during which individual and club projects will be displayed. The sponsor is Thomas G. Spring, biology teacher.

MONTPELIER, Vt.—A great deal of fun is had at Quiz Contests conducted regularly by the Science Forum at St. Michael's High School, sponsored by Sister M. Annunciata, science teacher. Members attack scientific subjects in more thorough and earnest fashion, however, when apparatus are constructed, papers are read and discussed and science demonstrations are given. Subjects covered are chemistry, physics and biology. A local science fair will be held in May where a display of exhibits will be arranged and lectures will be presented by young scientists. This club is also affiliated

with the Vermont Chapter of the Catholic Round Table of Science.

POMPTON LAKES, N. J.—The Science Club at Pompton Lakes High School, sponsored by Edmond Geisler, science teacher, is really a combination of two clubs under one charter. There is a Science Club proper which holds weekly meetings for discussion of the latest developments in science as reported by Science Service. Talks and demonstrations are given at the same time. Some members are establishing for the school a mineral collection of specimens from the rich Franklin and Patterson areas. Others are working on projects outside of school for display at the annual school exhibit. The second division is the Camera Club, which under the direction of Mr. Toan, has its own fully-equipped darkrooms. It recently spent a "Photographic Day" at the Bronx Zoo. The club also is affiliated with The American Institute Science and Engineering Clubs.

COMMERCE, Texas—The Star-Gazers Club at the Demonstration School (Junior High) of East Texas State Teachers College, meets bi-weekly at the home of a member, who acts as host and produces the program for the evening. In addition, field trips are made and laboratory demonstrations are given. The club is sponsored by E. H. Watson, director of the Demonstration School.

JOHNSTOWN, Pa.—The Johnstown Junior Academy of Science, formed at Central High School, puts on assembly programs and hopes to sponsor a Science Congress this spring. Plans are now under way for presentation of papers at the State Meeting. Exhibits are being built for display at the Pittsburgh Science Fair. This very active group of 90 members is sponsored by Sophie M. Moiles, head of the science department.

Clubs are invited to become affiliated with SCA for a nominal \$2 for 20 members or less. You can become an associate of SCA for 25 cents. Address: Science Clubs of America, 1719 N St., N.W., Washington, D. C.

CHEMISTRY—ENTOMOLOGY

Ammunition For Insect War Found in South's Own Soil

AMMUNITION for the South's unending war of defense against alien insect invaders can be found in the South's own soil, Dr. A. A. Nikitin, research chemist of the Tennessee Copper Company, told the meeting of the American Association for the Advancement of Science in Dallas.

Boll weevil, potato leaf hopper, Mexican bean beetle, Japanese beetle, white-fringed beetle and many other divisions of the enemy hordes can be fought and routed with dusts containing talc or fine white clay mined in the hills of Georgia and Carolinas, combined with copper compounds and other poisonous chemicals.

Even without the poisons, the white dusts alone will repel many of the pests, making them seek their food elsewhere than on valuable crop plants, Dr. Nikitin stated. This repellent effect is especially valuable against sucking insects like the leaf hoppers, which are very difficult to poison.

By diluting the poisonous compounds, these dust materials make the costly chemicals go much farther. For example, a 20-pound charge of copper arsenate dust will contain 16 pounds of clay or talc and only four pounds of the arsenate itself.

Extension of the dusting counter-attack against insect pests, and against fungi that cause diseases as well, is important in the present war emergency, when production of all crops must be increased, the speaker pointed out. Southern farmers have been used to dusting their cotton fields, but have clung to the idea that other crops can be protected only by spraying. Spraying equipment is elaborate and expensive, and may be hard to get in any case on account of priorities, whereas dusting can be carried on with the simplest kind of equipment. A 10-cent flour sieve, or even a common cotton sack, will serve if nothing else is available.

Science News Letter, February 7, 1942

NEW SECRETS OF METALLURGY



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(0.78 percent carbon steel) from an RCA Electron Micrograph made at a magnification of 25,000 diameters.

Revealed by the RCA ELECTRON MICROSCOPE!

MAGNIFICATIONS up to 100,000 diameters, through use of the RCA Electron Microscope, can now be applied to the study of metal structure—by means of a new technique.

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Viewed in the Electron Microscope, the replica reveals secrets of metallurgical structure never before visible. Yet the technique is simple and certain—within the reach of virtually every university and industrial laboratory. For further details, write



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INVENTION

New Machines And Gadgets

Novel Things for Better Living

Steam heat without connection to a central boiler is provided by a portable radiator that has just been patented. It looks much like any other steam radiator except that it is of much lighter construction. It has its own boiler, extending along the lower portion, which contains a small amount of water electrically heated. It should be useful at places where, or at times when, the regular heating system is inadequate or out of order.

The baking qualities of dough appear to depend on a number of factors usually associated with building materials and machinery, such as viscosity, elasticity and breaking strength. These in turn are related to the water content. In order that our bakers may produce bread of uniform quality, apparatus has been invented and recently patented for quickly measuring these quantities. First the rate at which the dough can be pushed through an aperture under a standard pressure is measured. This gives the viscosity. The rope of dough thus formed is then tested for its elasticity and tensile strength—in the same way that a steel bar is tested.

Plastic pistol handles like those shown in the illustration are molded in pairs and afterwards cut apart. This is much faster and more economical than the old-



style wooden handles. The grip is rugged and the plastic used has a higher impact resistance than any other plastic.

A portable bookcase, desk and drawing board that fold up in the shape and compass of a suitcase are all combined in a recent invention. When hung up to the wall, the lid folded down forms the desk or drawing board. Inside are bookshelves, pigeon holes, even an electric light to illuminate your work. The engineer, working in the field, can carry it about with him everywhere and hang it up on any convenient tree, fence, or billboard. Of course, a portable nail should also be carried to hang it up with.

Water repellent jackets are now being issued to Army men. The jackets are made of closely woven cotton poplin, lined with wool where added warmth

is required. The cotton is chemically treated at the mill with a water repellent, which also resists spots, stains and perspiration. Non-greasy spot and even soup spills can be sponged off with a damp cloth, or washed away with a dash of water which the cloth sheds. Yet unlike rubber or leather coats, the new garment allows the body to breathe. It is durable and can be repeatedly dry-cleaned or laundered.

Crackling electric discharges when combing your hair on dry winter mornings can be avoided by use of a comb made of electrically conducting rubber, recently patented. The rubber is made electrically conducting by incorporating with it a considerable amount of carbon black. Tires of electrically conducting rubber have been proposed as a means of preventing the accumulation of static charges on motor vehicles.

For pencils and fountain pens, a clip that securely clamps to the pocket has been invented. The end of a small protruding wire must be pushed to open the clamp which otherwise stays tightly closed. Though positive in action, this improved clip is not unduly complicated.

Fire resisting textiles can be made by treating cloth with ammonium sulphamate. This chemical, once a laboratory curiosity, is now in mass production for war purposes. Cloth treated with the chemical will char in flames but will not blaze and will therefore not spread the fire.

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N. St., N. W., Washington, D. C., and ask for Gadget Bulletin 99.

Science News Letter, February 7, 1942

CHEMISTRY

"Vegetable Ivory" May Be New Stuff For Buttons

THIS year's answer to that old question, "button, button, who's got the button?" is likely to be Ecuador, producer of tagua nuts, called "vegetable ivory."

Foreseeing a shortage in usual button materials, including plastics, the U. S. Army has announced a purchase of 2,592,000 "vegetable ivory" buttons. They can be used for all soldiers' garments except those requiring metal buttons.

Intensive tests showed tagua nut buttons able to withstand cracking under pressure, and intense heat, remain color-fast after numerous washings and blazing artificial sunlight.

Ecuador exporters say that they have surplus stocks of the tagua nuts due to their war-reduced shipping.

Science News Letter, February 7, 1942

An animal about half the size of a rabbit, called a *dassie*, is the closest living relative of the elephant.

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•First Glances at New Books

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AERONAUTICS

WAR IN THE AIR, September 1939—May 1941—David Garnett—*Doubleday, Doran*, 292 p., illus., \$3.50. Now that we Americans have suffered the effects of air attack, and at the same time are building our own air force into the mightiest in the world, we should find this book of particular interest, and full of facts which we can use to advantage. The author, besides being an experienced flying man himself, has had a distinguished career as a writer, so that he can combine authoritative information with attractive presentation.

Science News Letter, February 7, 1942

ORNITHOLOGY

WORLD OF BIRDS—Eric Parker—*Longmans, Green*, 295 p., \$3. For all the strain of war, England is an island where birds still sing. And here an Englishman takes time to talk about the birds he knows, interestingly and entertainingly as a Briton talking at his best.

Science News Letter, February 7, 1942

SOCIOLOGY

DIRECTORY OF SOCIAL AGENCIES OF THE CITY OF NEW YORK, 1942—Anastasia H. Evans, ed.—*Columbia Univ. Press*, 437 p., \$3. A new edition of a familiar reference book.

Science News Letter, February 7, 1942

PSYCHOLOGY

SOCIAL INFLUENCES AFFECTING THE BEHAVIOR OF YOUNG CHILDREN — Ruth Pearson Koshuk—*Society for Research in Child Development, National Research Council*, 71 p., \$1.

Science News Letter, February 7, 1942

MEDICINE

EYE HAZARDS IN INDUSTRY, Extent, Cause, and Means of Prevention — Louis Resnick—*Columbia University Press*, 321 p., \$3.50. This book gets off to a sensational start and contains a wealth of practical information for executives, safety engineers and vocational training authorities.

Science News Letter, February 7, 1942

NUTRITION

THE ART AND SCIENCE OF NUTRITION, A Textbook on the Theory and Application of Nutrition—Estelle E. Hawley and Grace Carden—*Mosby*, 619 p., illus., \$3.50. This text for students of nursing gives in detail the hows and whys of

special diets, such as those for diabetes, stomach disorders, and so on, as well as general principles of nutrition and detailed suggestions in the choice, preparation and serving of foods.

Science News Letter, February 7, 1942

BOTANY—

BIBLE PLANTS FOR AMERICAN GARDENS—Eleanor Anthony King—*Macmillan*, 203 p., illus., \$2. See page 87.

Science News Letter, February 7, 1942

BOTANY

A CONTRIBUTION TO OUR KNOWLEDGE OF RIVEA CORYMBOSA, The Narcotic Olliniqui of the Aztecs—Richard Evans Schultes—*Botanical Museum of Harvard University*, 45 p., \$1. A detailed study of a plant of the morning-glory family, much used by Indians of Mexico in medicine and magic.

Science News Letter, February 7, 1942

ORNITHOLOGY

A BEHAVIOR STUDY OF THE COMMON TERN (*Sterna hirundo hirundo* L.)—Ralph S. Palmer—*Boston Society of Natural History*, 119 p., illus. \$1. A close study of the behavior, both social and individual, of one of the most interesting of aquatic birds.

Science News Letter, February 7, 1942

PHOTOGRAPHY

THE PHOTOGRAPHER'S RULE BOOK — Larry June — *Macmillan*, 90 p., illus., \$1.25. An attractive and useful book for the novice at photography who wants to get good pictures of the family, especially the children, with an inexpensive camera.

Science News Letter, February 7, 1942

SCIENCE—EDUCATION

ENRICHED TEACHING OF SCIENCE IN THE HIGH SCHOOL: A Source Book for Teachers of General Science, Biology, Physics, Chemistry, and Other Sciences, Listing Chiefly Free and Low Cost Illustrative and Supplementary Materials (2nd edition)—Maxie Nave Woodring, Mervin E. Oakes and H. Emmett Brown—*Teachers College, Columbia Univ.*, 402 p., \$3.25. This will be a good investment for Science Clubs, for in addition to listing a vast amount of interesting material which can be secured for little or nothing, it gives such interesting information as how to make lantern slides. Of course science teachers and librarians will welcome the new edition.

Science News Letter, February 7, 1942

MEDICINE

CHINESE LESSONS TO WESTERN MEDICINE—I. Snapper—*Interscience Pub.*, 380 p., illus., \$5.50. A technical book on clinical medicine for students and physicians. Dr. Snapper writes about medicine from his viewpoint as head of the medical department of Peiping Union Medical College. China's medical problems, of course, are particularly of interest today when she is an important member of the 26 United Nations.

Science News Letter, February 7, 1942

ANTHROPOLOGY—AGRICULTURE

THE ISNEG FARMER—Morice Vanoverbergh—*Catholic Anthropological Conference, Catholic University of America*, 105 p., \$1.50. A careful and complete study of a group of primitive farmers in the Philippines, by a man who has spent much time among them. Not only are all details of crops and methods of cultivation recorded, but also all the minutely scrupulous ritual observances believed necessary for success of the harvest.

Science News Letter, February 7, 1942

CHEMISTRY

THE CHEMISTRY AND MANUFACTURE OF COSMETICS—Maison G. de Navarre and Ralph J. Mill—*Van Nostrand*, 745 p., illus., \$8. A fascinating volume for laymen, though written as a text for cosmetic technicians and students. Explains composition of thousands of cosmetic preparations from hair tonic to toenail polish. An apparently unforeseen side angle is the probable curtailing of cosmetic manufacture due to need for war materials. Fingernail polish, for example, has a basic ingredient of nitrocellulose. A chapter on the new food and drug act is included as of special interest to the commercial cosmetic manufacturer.

Science News Letter, February 7, 1942

ARCHAEOLOGY

THE PREHISTORY OF THE CHICKAMAUGA BASIN IN TENNESSEE—T. M. N. Lewis and Madeline Kneberg—*Division of Anthropology, The University of Tennessee*, 42 mimeographed p., pls., 35c. Tells what has been learned about relationships of Indian groups in this Southeastern area, in eight seasons of digging. This is the first issue of a new series of occasional publications, "Tennessee Anthropological Papers," undertaken by the University of Tennessee.

Science News Letter, February 7, 1942

•First Glances at New Books

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LANGUAGE

LANGUAGE HABITS IN HUMAN AFFAIRS, An Introduction to General Semantics—Irving J. Lee—*Harper*, 278 p., \$1.75. A text or general reading book on the college student level, analyzing language habits which lead to confusion, deception, or misunderstanding. Ways of achieving "a more extensional orientation" are outlined, and exercises and reference readings are suggested.

Science News Letter, February 7, 1942

PHYSICS

THE MECHANISM OF THE ELECTRIC SPARK—Leonard B. Loeb and John M. Meek—*Stanford Univ. Press*, 188 p., illus., \$3.50. In these days of high voltage and artificial lighting, the Townsend theory of the spark has proved inadequate. The authors present a new "Streamer Theory of Spark Discharge," based on the self-propagating positive streamer that occurs in all breakdown phenomena. They give methods of calculating the breakdown for various types of gap.

Science News Letter, February 7, 1942

ARCHAEOLOGY

WHAT MEAN THESE STONES? The Significance of Archaeology for Biblical Studies—Millar Burrows—*American Schools of Oriental Research*, 306 p., illus., \$2.50. Any one seriously interested in the material world of the Bible, and the manner of life of the people, will find much helpful information in this book by Yale's professor of Biblical theology. Prof. Burrows writes about discoveries of building foundations, papyri, religious and household objects and many another revelation which sheds light on Bible meanings.

Science News Letter, February 7, 1942

MATHEMATICS—ENGINEERING

ELEMENTARY MATHEMATICS FOR ENGINEERS—Sir Ambrose Fleming—*Chemical Pub. Co.*, 110 p., diags., \$2. In its few pages this book covers an astonishing amount of ground, including vector algebra, the differential and integral calculus, differential equations, harmonic analysis, hyperbolic trigonometry, and a set of mathematical tables.

Science News Letter, February 7, 1942

ENGINEERING

HANDWORK IN WOOD (rev. ed)—William Noyes—*Manual Arts Press*, 258 p., illus., \$3. The original edition of this book was looked upon as a classic of

woodworking. Much new material has now been added. It will appeal to the home craftsman, factory worker or teacher. It treats logging, sawmilling, how to use hand woodworking tools, fastenings, joints and how to make them, types of structures including house framing and wood finishing.

Science News Letter, February 7, 1942

TECHNOLOGY

BUILDING INSULATION, A Treatise on the Principles and Application of Heat and Sound Insulation for Buildings—Paul Dunham Close—*American Technical Society*, 328 p., illus., \$3. Keeping a house warm in winter has been compared with the problem of keeping a sieve full of water. Those interested in more economical methods will find this book useful. A list of commercial materials is given, their thermal and acoustic coefficients, methods of applying them and methods of calculating heat losses.

Science News Letter, February 7, 1942

CLIMATOLOGY

PHYSICAL CLIMATOLOGY—Helmut Landsberg—*Gray Printing Co., DuBois, Pa.*, 283 p., illus., \$3.50. A new treatment of the subject by a well-known geophysicist. This is a book for the student rather than for the general reader; though care is taken to keep mathematical treatment from being too intricate.

Science News Letter, February 7, 1942

GEOLOGY

OUTLINES OF HISTORICAL GEOLOGY (4th ed.)—Charles Schuchert and Carl O. Dunbar—*Wiley*, 291 p., illus., \$2.50. New edition of a highly successful text, with contents rearranged to add new effectiveness. Increased attention is given to recent geologic time.

Science News Letter, February 7, 1942

MARINE BIOLOGY

SEA OF CORTEZ, A Leisurely Journal of Travel and Research—John Steinbeck and Edward F. Ricketts—*Viking Press*, 598 p., illus., \$5. A couple of men went a-biologizing around the Gulf of California. They didn't intend to work very hard, but somehow they got quite a lot of collecting done. And they had a lot of fun doing it. In addition to telling about that, the book rambles all over the place, with talk about everything from religious mysticism to the sociological effects of high-voltage power lines.

Science News Letter, February 7, 1942

MEDICINE

I'M GONNA BE A FATHER!—Bob Dunn—*McKay*, cartoons, \$1. A playful little narrative in pictures intended as a gift for expectant fathers. It will help the poor fellows to laugh at their troubles.

Science News Letter, February 7, 1942

NATURAL HISTORY

THE NATURAL HISTORY OF SELBORNE—Gilbert White; James Fisher, ed.—*Penguin*, 256 p., 25c. One of the most admired of all classics of eighteenth-century natural history, edited for the popular low-priced Penguin Books series.

Science News Letter, February 7, 1942

ZOOLOGY

CINE-BIOLOGY—J. V. Durden, Mary Field and F. Percy Smith—*Penguin*, 128 p., illus., 25c. A Penguin Book about amoebae, water-fleas, small insects and may other interesting creatures that can be observed with the lower powers of a compound microscope or even a simple hand-lens. There are some beautiful photomicrographs among the illustrations.

Science News Letter, February 7, 1942

NAVIGATION

THE OBSERVER'S BOOK ON DEAD RECKONING NAVIGATION—W. J. D. Allan and William Alexander—*Chemical Pub. Co.*, 99 p., \$1.25. A brief, straightforward little manual for amateur airplane pilots. Frequent diagrams illustrate the problems and exercises are provided for practice. The material is designed to prepare the student for actual practice in the air.

Science News Letter, February 7, 1942

BOTANY

AN INTRODUCTION TO THE STUDY OF ALGAE—V. J. Chapman—*Macmillan*, 386 p., illus., \$3.75. A well-arranged, well-presented general text on a phylum of plants highly interesting but insufficiently studied in most botanical departments. Treatment includes not merely classification and life histories but physiology and ecology.

Science News Letter, February 7, 1942

EMBRYOLOGY

CONTRIBUTIONS TO EMBRYOLOGY, Vol. XXIX, Nos. 179 to 186—*Carnegie Institution of Washington*, 193 p., illus., \$4.50 paper; \$5.50 cloth. A group of eight papers, most of them on very early stages of development in the embryos of man and other primates.

Science News Letter, February 7, 1942